POLLEN GRAINS OF FORMOSAN PLANTS (7)[1]

TSENG-CHIENG HUANG[2] and THEIN-FOOK CHUNG[3]

Abstract: Pollen morphology of the Cyperaceae comprising 12 genera and 102 species has been studied. The description of each species, a key to genera, and illustrations are included. Generally speaking, the identification of the Cyperaceae with the aid of pollen morphology is rather difficult.

INTRODUCTION

The shape of the grains of the Cyperaceae is expressed by the outline of the grains, and the size of the grains is expressed by a×b×c where "a" equals the width, and "b" the length of grains in polar view, and "c" the height of the grains at the equatorial view (Figs. 1 & 1I), The distal aperture (usually furrow) is measured as width (Fig. IId), and the lateral aperture (either pore or furrow) is measured as the length times width (Fig. II; e×f). According to Dr. T. Koyama (in conversation in 1970), the grains of the Cyperaceae examined by EM reveal three different types of pollen morphology, namely, grains which are apple-shape, 1+3– or 1+6– aperturate, with a granulate sexinal pattern which is found in most members of Cyperaceae; grains spheroidal, polyforate, with granulate sexinal pattern which is found in the members of *Machaerina*, and grains spheroidal, inaperturate, with subreticulum sexinal pattern which is found in the members of *Hypolytrum*. We have examined only the first type in this study, the latter two types may be observed when more materials are studied in the future.

OBSERVATION

Pollen grains of Cyperaceae are 1–4–aperturate, obovoidal (apple-shape), rectangular, ellipsoidal to spheroidal or triangular, 21–60×25–95×23–70 μ. Furrow in 1–aperturate grains usually are as long as the P axes, being 25–95×3×27 μ. Distal aperture in 4–aperturate grains is 4–20 μ wide. Lateral aperture in 4–aperturate grains have either pores or furrows which size is 4–20×2–10 μ. Exine is usually tectate, 1–3 μ thick. Sexine is usually granulate, with LO-pattern, except grains of *Hypolytrum*. Tectum is psilate or with scabrate to verrucate processes. Endosexine is infrategillar baculate.

Key to genera

1. Sexine micro-reticulate, with OL-pattern.....*Hypolytrum*

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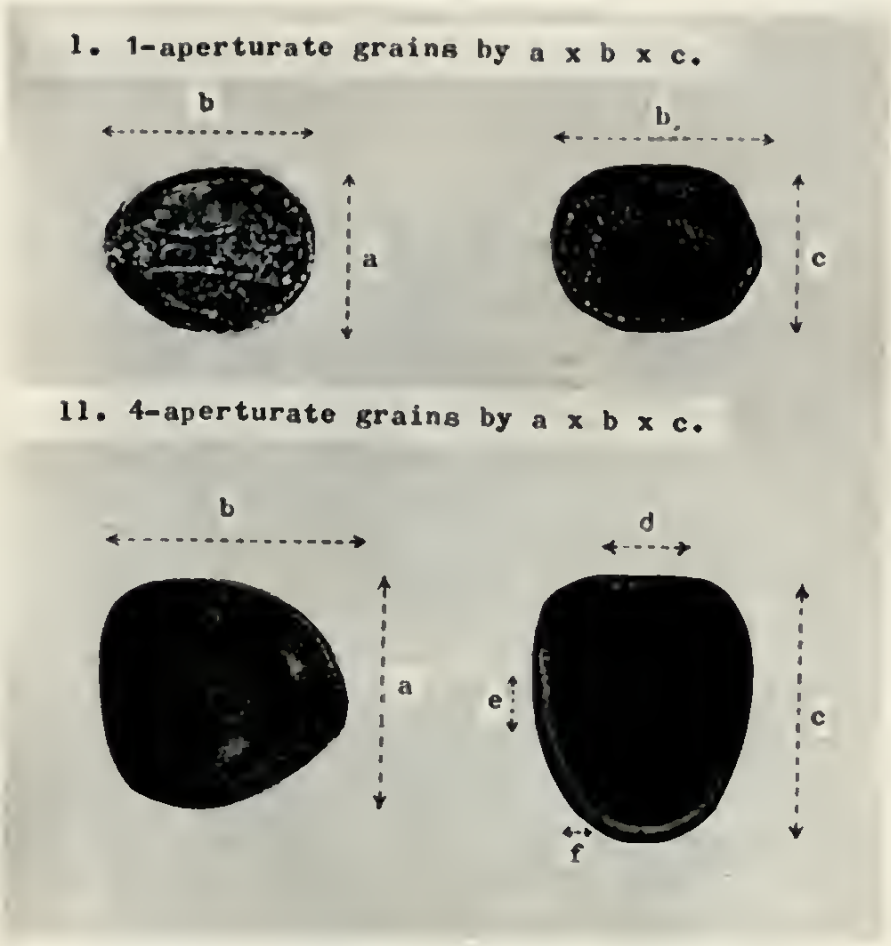


Figs. I-II. Size measurement.

1. Sexine granulate, with LO-pattern 2
2. Granules fine; tectum psilate.....*Furiena*
2. Granules medium to coarse 3
3. Granules coarse; tectum with scabrate to verrucate processes.....4
3. Granules medium; tectum with scabrate processes or psilate.....5
4. Tectum with scabrate processes.....*Eleocharis*
4. Tectum with verrucate processes.....*Fimbristylis*
5. Grains either 1- or 4-aperturate 6
5. Grains both 1- and 4-aperturate 7
6. Grains always 4-aperturate .....*Kyllinga, Lipocarpa*
6. Grains always 1-aperturate .....*Scirpus, Scleria*
7. Grains mostly 4-aperturate, sometimes 1-aperturate.....*Cyperus*
7. Grains mostly 1-aperturate, sometimes 4-aperturate .....*Bulbostylis, Carex, Rhynchospora*

Bulbostylis barbata (Rottb.) C. B. Clarke 旗茅 Plate I & Fig. 1

Grains 1-aperturate, obovoidal to rectangular in equatorial and ellipsoidal to spheroidal in polar views, 25(-27)-29×31(-32)-33×29(-31)-33 μ. Furrows as long as P axes, 31-33×5-8 μ. Exine tectate, 1 μ thick. Sexine granulate, with LO-pattern. Tectum psilate.

The voucher is Tainan, *Kawakami s. n.* Oct. 1913.

Bulbostylis capillaris (L.) C. B. Clarke var. **trifida** (Kunth.) C. B. Clarke 細毛旗茅

Grains 1-aperturate, ellipsoidal in both equatorial and polar views, 21(-23)-26×25(-27)-30×23(-24)-25 μ. Furrows as long as P axes, 25-30×3-5 μ. Exine intectate, 1.5 μ thick. Sexine granulate, with LO-pattern. Tectum with scabrate processes.

The voucher is Taipei, *Tanaka & Shimada 11094.*

Bulbostylis densa (Wall.) Handel-Mazzetti 密生旗茅 Plate I & Fig. 2

Grains 1-aperturate, obovoidal in equatorial and ellipsoidal in polar views, 33(-38)-42×41(-42)-43×57 μ. Furrows as long as P axes, 41-43×12-15 μ. Exine tectate, 1.5-2 μ thick. Sexine granulate, with LO-pattern. Tectum psilate.

The voucher is Hsinchu, *Sasaki s. n.* June 17, 1932.

Carex alliiformis C. B. Clarke

Grains 1-aperturate, obovoidal in equatorial and ellipsoidal or of various shapes in polar views, 37-40×42(-44)-47×49(-50)-53 μ. Furrows as long as P axes, 42-47×7-15 μ. Exine tectate, 1.2 μ thick. Sexine granulate, with LO-pattern. Tectum with finely scabrate processes or psilate.

The voucher is Hualien, Chin-shui Shan, *Sasaki s. n.* Nov. 3, 1934.

Carex baccans Nees. 紅果薹

Grains 1-aperturate, obovoidal in equatorial and of various shapes in polar views as triangular, obovoidal to ellipsoidal, 26-34×30(-37)×37-50 μ. Furrows as long as or as 3/4th the length of P axes, 31-37×7-10 μ. Exine tectate, 1-1.2 μ thick. Sexine finely granulate, with indistinct LO-pattern. Tectum psilate.

The vouchers are Meitan, *Kudo & Sasaki s. n.* Sept. 17, 1927; Wushe, *Mori 1994.*

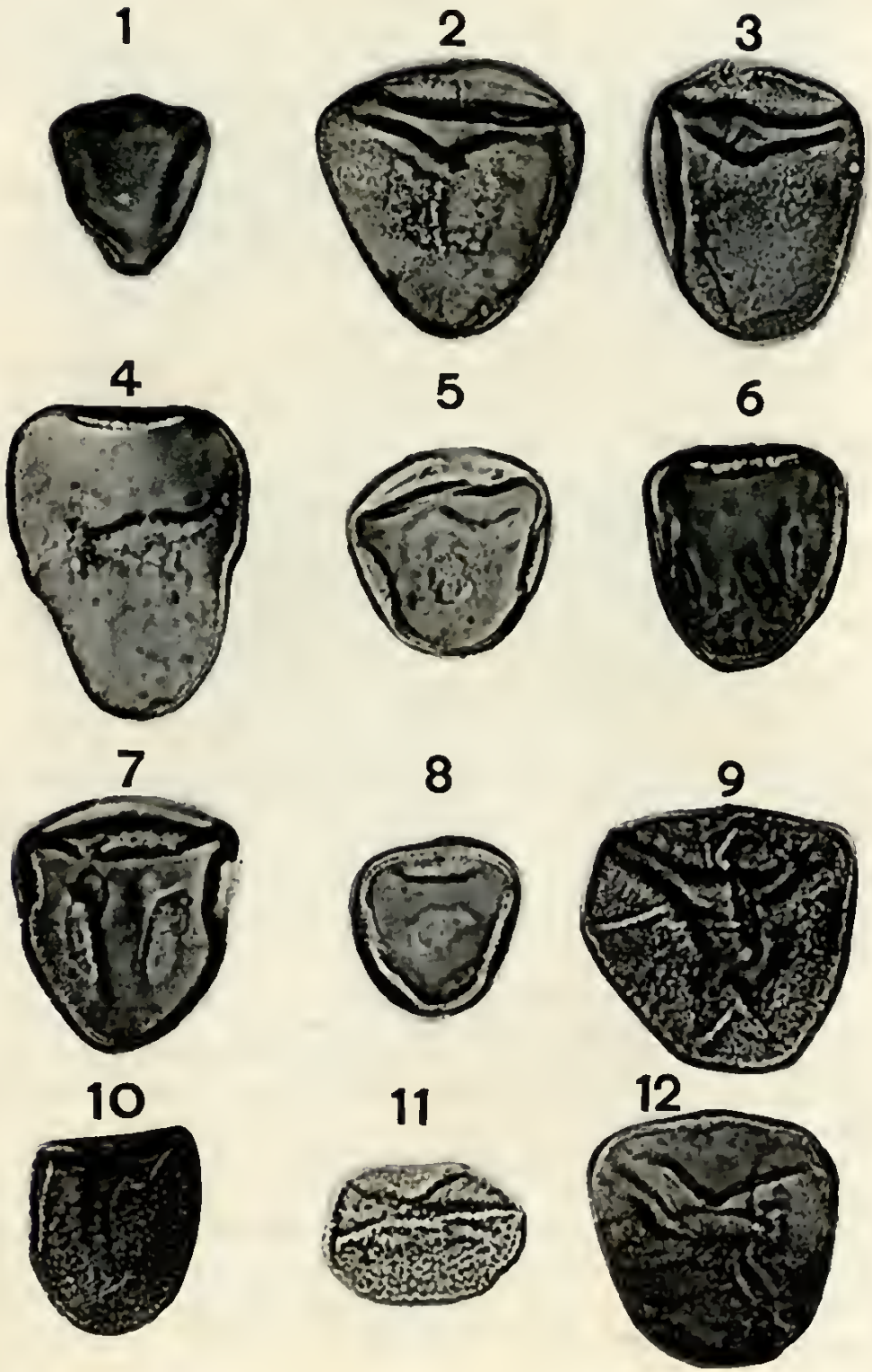
Carex bilateralis Hay. 闊嘴薹

Grains 4-aperturate, three lateral faint poroids and one distinct distal furrow, obovoidal in equatorial and ellipsoidal to subspheroidal in polar views, 31-33×30(-36)-38×38-46 μ. Distal furrow mostly irregulary broken, 8-14 μ wide. Lateral pores 6-7×3-5 μ. Exine tectate, 1.2 μ thick. Sexine granulate, with LO- or indistinct pattern. Tectum psilate.

The voucher is Hualien, *s. coll. 4548.*

Carex brevieulmis R. Br. 青管

Grains 1-aperturate, obovoidal (apple-like) to subspheroidal in equatorial and ellipsoidal or rhomboidal to rectangular in polar views, 30-35×25-50×36-41 μ. Furrows as long as or as 3/4th the length as P axes, 20-50×4-7 μ. Exine tectate, 1-2 μ thick. Sexine granulate, with LO-pattern. Tectum psilate.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The vouchers are Mt. Chihsin, *Kao & Chuang 3315*; Tanshui, *Simada 1192*.

Carex breviculmis R. Br. var. **fibrillosa** (Fr. & Sav.) Kükenth.

Grains 1-aperturate, obovoidal in equatorial and ellipsoidal in polar views, 37×38–45×45–49 μ. Furrows as long as P axes, 45–49×5–10 μ. Exine tectate, 1.5 μ thick. Sexine granulate, with LO-pattern. Tectum psilate.

The voucher is Taipei, *Kao & Chuang 3347*.

Carex brunnea Thunb. 莎草, 東草

Grains 1-aperturate, obovoidal in equatorial with pointed proximalipolar and ellipsoidal in polar views, 30–36×27–43×35–43 μ. Furrows as long as or as 3/4th the length of P axes, 32–43×10 μ. Exine tectate, 1–1.5 μ thick. Sexine granulate, with LO-pattern. Tectum psilate.

The voucher is Cheutzefu, *Sasaki s.n.* Feb. 16, 1930.

Carex chrysolepis Fr. & Sav. 黃花薹 Plate I & Fig. 3

Grains 4-aperturate, obovoidal in equatorial and ellipsoidal in polar views, 32–35×32(–34)–39×41(–45)–48 μ. Distal aperture ellipsoidal, ragged, 7–10 μ wide. Lateral pores 3–7×3–5 μ. Exine tectate, 1 μ thick. Sexine granulate, with LO-pattern. Tectum psilate.

The voucher is Mt. Morrison, *Chuang & Kao 4008*.

Carex cruciata Wahlenb. 紅色煙火薹

Grains 4-aperturate, three lateral faint pores and one distinct distal furrow, obovoidal in equatorial and ellipsoidal to subspheroidal in polar views, 35–40×35(–38)–39×43(–45)–47 μ. Distal furrow 5–8 μ wide. Lateral pores 11×4 μ or grains 1-aperturate, obovoidal in equatorial and ellipsoidal in polar views, 28–38×34(–38–43)–49×38–42 μ. Furrows as long as P axes or as 3/4th the length as P axes, 34–40×10–14 μ. Exine tectate, 1 μ thick. Sexine granulate, with LO-pattern. Tectum psilate.

The vouchers are Mt. Taiping, *Suzuki S. s.n.* July 16, 1929; Taipei, *Miura & Fukuyama 157*; Wushe, *Masamune & Nakamura 1998*.

Carex daibuensis Hay. 大武薹

Grains 4-aperturate, three lateral faint poroids and one distinct distal furrow,

Plate I. Cyperaceae, ×1000.

1. *Bulbostylis barbata* (Rottb.) C. B. Clarke (*Kawakami s.n.* Oct. 1913)
2. *Bulbostylis densa* (Wall.) Handel-Mazzetti (*Sasaki s.n.* June 17, 1932)
3. *Carex chrysolepis* Fr. & Sav. (*Chuang & Kao 4008*)
4. *Carex makinoensis* Franchet (*Kao & Chuang s.n.* Aug. 29, 1957)
5. *Cyperus distans* L. f. (*Kao 4221*)
6. *Cyperus globosus* All. (*Oiye S. 134*)
7. *Cyperus javanicus* Hout. (*Sata s.n.* July 24, 1933)
8. *Cyperus silletensis* C. B. Clarke (*Wu P.H. 17*)
9. *Eleocharis congesta* D. Don var. *japonica* (Miq.) T. Koyama (*Simizu 2152*)
10. *Fimbristylis miliacea* (L.) Vahl. (*Sasaki s.n.* 1926)
11. *Fimbristylis squarrosa* Vahl. (*Sasaki s.n.* Aug. 1928)
12. *Fuirena umbellata* Rottb. (*Simada 735*)

obovoidal in equatorial and ellipsoidal in polar views, 32(–34)–41×34(–40)–42×45 μ. Distal furrow 4–8 μ wide. Lateral furrow 5–8×2–3 μ. Exine tectate, 1 μ thick. Sexine finely granulate, with indistinct LO-pattern. Tectum psilate.

The voucher is Hualien, Mt. Chinsui, *Shimizu & Kao 11927.*

Carex doniana Spreng.

Grains 1–aperturate, obovoidal to ellipsoidal in equatorial and ellipsoidal to spheroidal in polar views, 42–44×43(–47)–53×38–41 μ. Furrows as long as P axes, 43–53×3–5 μ. Exine tectate, 1.5 μ thick. Sexine granulate, with LO-pattern. Tectum psilate.

The voucher is Hualien, *Sasaki s. n.* June 11, 1933.

Carex fallax Steud. var. **pseudoarenicola** (Hay.) Ohwi

Grains 1–aperturate, obovoidal to ellipsoidal in equatorial and ellipsoidal to spheroidal in polar views, 34(–39)–47×40(–47)–53×43–45 μ. Furrows as long as P axes, 40–53×3–5 μ. Exine tectate, 1–1.5 μ thick. Sexine granulate, with LO-pattern. Tectum pailate.

The voucher is Hualien, *Sasaki & Mori s. n.* May 18, 1932.

Carex finitina Boott. 阿里薹

Grains 1–aperturate, ellipsoidal in both equatorial and polar views, 41–43× 61(–67)–70×42–44 μ. Furrows as long as P axes, 61–70×13–15 μ. Exine tectate, 2 μ thick. Sexine granulate, with LO-pattern. Tectum psilate.

The voucher is Hualien, Batakan, *Sasaki s. n.* May 17, 1932.

Carex fulvo-rubescens Hay. 茶色薹

Grains 1(–4)–aperturate, three lateral indistinct poroids and one distinct distal furrow, obovoidal in equatorial and irregularly spheroidal to ellipsoidal in polar views, 32(–36)–37×36(–40)–43×40(–46)–47 μ. Distal furrow 10–13 μ wide. Lateral pores 4–5×3 μ. Exine tectate, 1.5–2 μ thick. Sexine finely granulate, with LO-pattern. Tectum psilate.

The voucher is Hsinchu, *Masamune 1204.*

Carex gracilispica Hay. 細穗花薹

Grains 1–aperturate, obovoidal in equatorial and ellipsoidal in polar views, 30–32×31(–40)–46×39–44 μ. Furrows as long as P axes, 36–40×5–8 μ. Exine tectate, 1–1.5 μ thick. Sexine finely granulate, with LO-pattern. Tectum psilate.

The voucher is Taipei, *Suzuki T. 6544.*

Carex hatusimana Ohwi 初島氏薹

Grains 1–aperturate, obovoidal in equatorial and subspheroidal to spheroidal in polar views, 34–37×32–34×37 μ. Furrow as 3/4th the length as P axes, 25–30×5–7 μ. Exine tectate, 2 μ thick. Sexine finely reticulate, with OL-pattern. Tectum psilate.

The voucher is Taipei, Kankou, *Sasaki s. n.* Oct. 31, 1937.

Carex jacens C. B. Clarke

Grains 1–aperturate, obovoidal in equatorial and triangular to various shapes in

polar views, 39×42(–44)–47×47 μ. Furrows as 3/4th the length as P axes, 35–40×7–12 μ. Exine tectate, 2 μ thick. Sexine granulate. with LO-pattern. Tectum psilate.

The voucher is Tasheshan, *Sato 10862.*

Carex kobomugi Ohwi 篠草

Grains 1–aperturate, obovoidal in both equatorial and polar views, 50(–56)–60×50(–52)–60×62(–63)–70 μ. Furrows as 3/4th the length as P axes, 45–50×22–27 μ. Exine tectate, 2 μ thick. Sexine granulate, with LO-pattern. Tectum psilate.

The voucher is Taipei, *Sasaki s. n.* Mar. 20, 1924.

Carex ligulata Nees.

Grains 1–aperturate, subspheroidal to spheroidal in both equatorial and polar views, 35(–39)–40×40×40 μ. Furrows as 3/4th the length as P axes, 30–32×10–13 μ. Exine tectate, 1–1.2 μ thick. Sexine granulate, with LO-pattern. Tcctum psilate.

The voucher is Tungshiao, *Takase s. n.* Aug. 25, 1927.

Carex maculata Boott. 立型薹

Grains 1–aperturate, obovoidal in equatorial and ellipsoidal in polar views, 35–37×38–45×48–51 μ. Furrows as long as P axes, 38–45×7–8 μ. Exine tectate, 1.5 μ thick. Sexine granulate, with LO-pattern. Tectum psilate.

The voucher is Mt. Chisin, *Chuang 2781.*

Carex makinoensis Franchet 變型薹 Plate 1 & Fig. 4.

Grains 1–aperturate, obovoidal in equatorial and ellipsoidal in polar views, 40–43×37(–47)–52×58(–65)–67 μ. Furrows as long as or 3/4th the length as P axes, 37–52×6–10 μ. Exine tectate, 2 μ thick. Sexine granulate, with indistinct LO-pattern. Tectum psilate.

The voucher is Tawu. Kao & Chuang s. n. Aug. 29, 1957.

Carex manca Boott.

Grains 1–aperturate, obovoidal in both equatorial and polar views, 40–45×46–47×50–51 μ. Furrows as long as P axes, 46–47×5–7 μ. Exine tectate, 1 μ thick. Sexine granulate, with LO-pattern. Tectum psilate.

The voucher is Taipei, *Suzuki T. 8831.*

Carex orthostemon Hay.

Grains 1–aperturate, obovoidal in equatorial and ellipsoidal in polar views, 36–39×39–42×48–50 μ. Furrows as long as P axes, 39–42×7–15 μ. Exine tectate, 1.5 μ thick. Sexine granulate, with indistinct LO-pattern. Tectum psilate.

The voucher is Pasenshan, *Suzuki T. s. n.* Oct. 22, 1929.

Carex phaeota Spreng.

Grains 1–aperturate, obovoidal in equatorial and ellipsoidal in polar views, 40(–41)–44×53(–57)–60 μ. Furrows as long as P axes, 53–60×5–10 μ. Exine tectate, 2 μ thick. Sexine granulate, with LO-pattern. Tectum psilate.

The voucher is Taipei, *Suzuki T. 7319.*

Carex pumila Thunb. 矮薹

Grains 1-aperturate, ellipsoidal in both equatorial and polar views, 47×75(-85)-95×53-65 μ. Furrows as long as P axes, 75-95×15-20 μ. Exine tectate, 1.5 μ thick. Sexine granulate, with LO-pattern. Tectum psilate.

The voucher is Tainan, *Sasaki s. n.* May 24, 1924.

Carex remotiuscula Wahlenb.

Grains 1-aperturate, obovoidal in equatorial and ellipsoidal in polar views, 41-42×45(-55)-57×51-55 μ. Furrows as long as P axes, 45-57×10-12 μ. Exine tectate, 1.5 μ thick. Sexine granulate, with LO-pattern. Tectum psilate.

The voucher is Mt. Morrison, *Chuang & Kao 4080.*

Carex rafflesiana Boott. var **seaberrima** Kuck.

Grains 1-aperturate, ellipsoidal in both equatorial and polar views, 30-34×46(-48)-50×34(-40)-48 μ. Furrows as long as P axes, 40-50×10-13 μ. Exine tectate, 1.5-2 μ thick. Sexine granulate, with LO-pattern. Tectum psilate.

The voucher is Botel Tobago, *Hosokawa s. n.* July 12, 1933.

Carex satsumensis Franch. & Sav. 油菜草

Grains 1-aperturate, obovoidal in equatorial and ellipsoidal to subspheroidal in polar views, 45(-51)-54×47(-51)-63×63-65 μ. Furrows as long as P axes, 47-63×11-15 μ. Exine tectate, 1.5-2 μ thick. Sexine finely granulate, with indistinct LO-pattern. Tectum psilate.

The voucher is Tainan, *Suzuki T. 8679.*

Carex sociata Boott.

Grains 1-aperturate, obovoidal in equatorial and rhomboidal to ellipsoidal in polar views, 37-41×33-52×37-63 μ. Furrows as long as or as 3/4th the length as P axes, 26-52×8-10 μ. Exine tectate, 1.5 μ thick. Sexine finely granulate, with LO-pattern. Tectum psilate.

The vouchers are Wulai, *Chuang 2581;* Hsinchu, *Simada 274C.*

Carex subtransversa C. B. Clarke

Grains 1-aperturate, obovoidal (apple-shape) in equatorial and ellipsoidal in polar views, 46-50×50(-57)-61×43(-47)-53 μ. Furrows as long as P axes, 50-61×10-15 μ. Exine tectate, 2 μ thick. Sexine finely granulate, with indistinct LO-pattern. Tectum psilate.

The voucher is Mt. Morrison, *Chuang & Kao 4056.*

Carex tatsutakensis Hay.

Grains 1-aperturate, obovoidal in equatorial and ellipsoidal or variously in polar views, 25-27×31-33×34(-35)-40 μ. Furrows as 3/4th the length as P axes, 25-28×10-13 μ. Exine tectate, 1 μ thick. Sexine finely granulate, with LO-pattern. Tectum psilate.

The voucher is Mt. Morrison, *Kao & Chuang 4089.*

Carex tristachya Thunh.

Grains 1-aperturate, obovoidal in equatorial and ellipsoidal in polar views, 22× 25–30×24 μ. Furrows as long as P axes, 25–30×5–7 μ. Exine tectate, 1 μ thick. Sexine granulate, with LO-pattern. Tectum psilate.

The voucher is Taipei, *Sasaki s. n.* Apr. 20, 1932.

Cyperus cuspidatus H. B. K.

Grains 4-aperturate, three lateral indistinct poroids and one distinct furrow in distal end, ohovoidal to ellipsoidal in equatorial and ellipsoidal in polar views, 24–29×30(–34)–36×29–32 μ. Distal furrow 10–11 μ wide. Lateral pore 7×3–5 μ. Exine tectate, 2–3 μ thick. Sexine granulate, with LO-pattern. Tectum psilate.

The voucher is Taichung, *Suzuki S. 6786.*

Cyperus cyperioides (L.) O. Kuntze 三稜子草

Grains 4-aperturate, ohovoidal to ellipsoidal in hoth equatorial and polar views, 28–43×30–53×36–49 μ. Distal furrow 12–14 μ wide. Lateral pore 4–7×5–7 μ. Exine tectate, 2–3 μ thick. Sexine granulate, with LO-pattern. Tectum psilate.

The vouchers are Taipei, *Oiye Shinichiro s. n.* Apr. 16, 1935; Botel Tohago, *Sasaki s. n.* June 14, 1926.

Cyperus difformis L. 球花蔺草

Grains 4-aperturate, obovoidal to rectangular in equatorial and ellipsoidal or ohovoidal in polar views, 23×24(–27)–31×25–27 μ. Distal furrow 12 μ wide. Lateral furrow 13×3 μ. Exine tectate, 2 μ thick. Sexine granulate, with LO-pattern. Tectum psilate.

The voucher is Taipei, *Kao & Chuang 2971.*

Cyperus diffusus Vahl.

Grains 4-aperturate, obovoidal in eqnatorial and ellipsoidal to obovoidal in polar views, 27(–29)–32×33(–35)–37×32–35 μ. Distal aperture 5–7 μ wide. Lateral furrow 15×2 μ. Exine tectate, 1.2 μ thick. Sexine granulate, with LO-pattern.

The voucher is Taitung, *Simizu 3774.*

Crperus distans L. f. 落蓳草 Plate I & Fig. 5

Grains 4-aperturate, ohovoidal (apple-shape) in equatorial and ellipsoidal in polar views, 30–32×32(–33)–36×30–35 μ. Distal furrow 4–7 μ wide. Lateral pore 8–10×3–5 μ. Exine tectate, 1.5–2 μ thick. Sexine granulate, with LO-pattern. Tectum psilate.

The voucher is Pingtung, Kengting, *Kao 4221.*

Cyperus eleusinoides Kunth.

Grains 1(–4)-aperturate, ohovoidal (apple-shape) in equatorial, ohovoidal in polar views. 32(–35)–37×39(–41)–42×35(–37)–42 μ. Distal furrow 12–14 μ wide. Lateral pore 9–10×2–6 μ. Exine tectate, 1.5–2 μ thick. Sexine granulate, with LO-pattern. Tectum psilate.

The voucher is Taipei, *Kao & Chuang 1764.*

Cyperus ferax L. C. Rich. 香莎草

Grains 1(–4)–aperturate, three lateral indistinct poroids and one distinct furrow in distal end, obovoidal in hoth lateral and equatorial or suhspheroidal to spheroidal in equatorial and ellipsoidal in polar views, 28–36×35–50×40–50 μ. Distal furrow 4–11 μ wide. Lateral furrow 16×4 μ. Exine tectate, 1.5–2 μ thick. Sexine granulate, with LO-pattern. Tectum psilate.

The vouchers are Tainan, *Morimoto 202*; Botel Tobago, *Sasaki s.n.* June 1926.

Cyperus globosus All. 畦畔儒草 Plate I & Fig. 6

Grains 4–aperturate or 1–aperturate, three lateral indistinct poroids and one distinct distal furrow, triangular, spheroidal, ohovoidal to ellipsoidal in equatorial and spheroidal to ellipsoidal in polar views, 22–37×24–40×27–41 μ. Distal furrow 7–10 μ wide. Lateral furrow 9–17×4–5 μ. Exine tectate, 1.2–2.5 μ thick. Sexine granulate, with LO-pattern. Tectum psilate.

The vouchers are Rotung, *Sasaki 3705, Morimoto 204*; Taipei, *Oiye Shinichiro 134, Simizu 2332*; Pingtung, Kengting, *Kao 4217.*

Cyperus haspan L. 小畦畔儒草

Grains 4–aperturate, ohovoidal to triangular in equatorial and ellipsoidal in polar views, 22–26×24–31×27–29 μ. Distal furrow 7–10 μ wide. Lateral pore 10×4–6 μ. Exine tectate, 1.5 μ thick. Sexine granulate, with LO-pattern. Tectum psilate.

The voucher is Taipei, Kuei-shan, *Chuang 3102.*

Cyperus imbricatus Retz.

Grains 1(–4)–aperturate, obovoidal to ellipsoidal in equatorial and ellipsoidal in polar views, 32–37×40–42×35(–38)–42 μ. Distal furrow 10–13 μ wide. Lateral pore 4×2 μ. Exine tectate, 1.5–2 μ thick. Sexine granulate, with LO-pattern. Tectum psilate.

The voucher is Taichung, *Suzuki T. 8203.*

Cyperus iria L. 荊三稜, 三方草

Grains 4–aperturate, obovoidal in lateral view, obovoidal in equatorial, and ellipsoidal to subspheroidal in polar views, 30–34×30–42×39–52 μ. Distal furrow 6–10 μ wide. Lateral furrow 8–13×2–6 μ. Exine tectate, 2–3 μ thick. Sexine granulate, with LO-pattern. Tectum psilate.

The vouchers are Ilan Hsien, Kuei-shan, *Hsu s.n.* Sept. 25, 1960.

Cyperus javanicus Hout 瓜哇莎草 Plate I & Fig. 7

Grains 4–aperturate, three lateral furrows and one distinct distal furrow, ohovoidal to ellipsoidal in equatorial and ellipsoidal in polar views, 33–42×33–52×33–50 μ. Distal furrow 7–12 μ wide. Lateral furrow 14–17×3–10 μ. Exine tectate, 1.5–2 μ thick. Sexine granulate, with LO-pattern. Tectum psilate.

The vouchers are Tainan, *Morimoto 193*; Botel Tohago, *Masamune 4127, Sasaki s.n.* May 5, 1924, *Sata s.n.* July 24, 1933.

Cyperus malaccensis Lank. 鋪草

Grains 1(–4)–apertural, obovoidal in equatorial and suhspheroidal in polar views, 30–32×34(–36)–41×40–43 μ. Distal furrow 8–10 μ wide. Lateral furrow 8–13×3–5 μ. Exine tectate, 1.5 μ thick. Sexine granulate, with LO-pattern. Tectum psilate.

The voucher is Nantou, Sun Moon Lake, *DeVol 17505*.

Cyperus nutans C. B. Clarke

Grains 1(–4)–aperturate, obovoidal in equatorial and suhspheroidal to spheroidal in polar views, 34–36×40(–41)–42×36–41 μ. Distal furrow 12–14 μ wide. Lateral furrow 10–12×3–5 μ. Exine tectate, 2 μ thick. Sexine granulate, with LO-pattern. Tectum psilate.

The voucher is Botel Tohago, *Sasaki s. n.* June 5, 1926.

Cyperus pilosus Vahl.

Grains 1(–4)–aperturate, obovoidal to ellipsoidal in equatorial and ellipsoidal in polar views, 32–37×40(–43)–46×37(–39)–46 μ. Furrows 35×4–10 μ. Distal furrow 10–12 μ wide. Lateral furrow 10×2–4 μ. Exine tectate, 2 μ thick. Sexine granulate, with LO-pattern. Tectum psilate.

The vouchers are Ilan Hsien, Tali, *Hsu s. n.* Sept. 24, 1960; Taipei, Nankan, *Chuang 4129*.

Cyperus platystylis R. Br.

Grains 1–aperturate, apple-shape to spheroidal in equatorial and ellipsoidal in polar views, 39–41×50×46 μ. Furrows as long as P axes, 50×10–14 μ. Exine tectate, 2 μ thick. Sexine granulate, with LO-pattern. Tectum psilate.

The voucher is Sun Moon Lake, *DeVol 7506*.

Cyperus polystachyos Rotth. 毛穗旋草

Grains 1(–4)–aperturate, three lateral indistinct furrows and one distinct distal furrow, obovoidal (apple-shape), spheroidal or rectangular in equatorial and ellipsoidal in polar views, 30–38×35–47×32–49 μ. Distal furrow 10–12 μ wide. Lateral furrow 6–10×2–4 μ. Exine tectate, 1.5–2 μ thick. Sexine granulate, with LO-pattern. Tectum psilate.

The vouchers are Taipei, *Mori s. n.* Apr. 24, 1958; Taitung, Hsinkan, *Chuang 2225*; Botel Tohago, *Sasaki s. n.* Nov. 3, 1934.

Cyperus pumila L. 矮莎草

Grains 1(–4)–aperturate, obovoidal in equatorial and ellipsoidal in polar views, 28×30(–31)–35×27(–31)–33 μ. Distal furrow 4–7 μ wide. Lateral pore 6–8×3–5 μ. Exine tectate, 1.5–2 μ thick. Sexine granulate, with LO-pattern. Tectum psilate.

The voucher is Tainan, *Chen & Kao 3101*.

Cyperus radians Ohwi

Grains 4(–1)–aperturate, three lateral indistinct furrows or pores, one distinct furrow in distal end, obovoidal to suhspheroidal in equatorial and ellipsoidal in polar views, 25(–29)–32×30(–39)–40×36(–37)–45 μ. Distal furrow 8–14 μ wide. Lateral pore 4×3 μ. Exine tectate, 2 μ thick. Sexine granulate, with LO-pattern.

Tectum psilate.

The voucher is Hsinchu, *Simada 3214.*

Cyperus rotundus L. 香附子, 莎草

Grains 1(–4)–aperturate, ohovoidal in equatorial and ellipsoidal to rectangular in polar views, 40–42×43(–47)–50×50(–51)–55 μ. Distal furrow 5–6 μ wide. Lateral furrows 8–10×2–4 μ. Exine tectate, 1.5 μ thick. Sexine granulate, with LO-pattern. Tectum psilate.

The voucher is Yunlin Hsien, Lungen, *Kao & Chuang 4116.*

Cyperus sanginolentus Vahl.

Grains 1(–4)–aperturate, ohovoidal in equatorial and ellipsoidal in polar views, 31–36×43(–46)–50×36(–39)–43 μ. Distal furrow 6–8 μ wide. Lateral pore 10×8 μ. Exine tectate, 2 μ thick. Sexine granulate, with LO-pattern. Tectum psilate.

The voucher is Taitung, Tzu-pun, *Chuang 2063.*

Cyperus serotinus Retz.

Grains 1(–4)–aperturate, ohovoidal in equatorial and ellipsoidal in polar views, 36–37×42(–45)–47×41(–44)–45 μ. Distal furrow 3–6 μ wide., Lateral furrow 12×2 μ. Exine tectate, 1.5–2 μ thick. Sexine granulate, with LO-pattern. Tectum psilate.

The voucher is Taipei, *Chuang 2986.*

Cyperus silletensis C. B. Clarke Plate I & Fig. 8

Grains 4–aperturate, obovoidal in equatorial and ellipsoidal in polar views, 34–42×33(–41)–52×40–45 μ. Distal furrow 6–12 μ wide. Lateral furrow 13×2–6 μ. Exine tectate, 1.5 μ thick. Sexine granulate, with LO-pattern. Tectum psilate.

The voucher is Pa-twan-shi, *Wu P. H. 17.*

Cyperus stoloniferus Retz. 臥莖莎草

Grains 1(–4)–aperturate, obovoidal in equatorial and ellipsoidal in polar views, 35×40(–50)–52×46–50 μ. Distal furrow 7–10 μ wide. Lateral furrow 11–12×4–5 μ. Exine tectate, 2 μ thick. Sexine granulate, with LO-pattern. Tectum psilate.

The voucher is Huwei, *Suzuki S. s. n.* Aug. 16, 1936.

Cyperus tenuiculmis Böckeler 細莖莎草

Grains 1–4–aperturate, ohovoidal to spheroidal in equatorial and ellipsoidal in polar views, 29–40×35–46×35–54 μ. Distal furrow 10–11 μ wide. Lateral furrow 14–18×3–7 μ. Exine tectate, 1.2–2.5 μ thick. Sexine granulate, with LO-pattern. Tectum psilate.

The vouchers are Taichung, *Yamamoto 8731*; Taitung, *Kawakami & Nakahara 1524.*

Cyperus tenuispiea Steud. 細穗花莎草

Grains 4(–1)–aperturate, ohovoidal in equatorial and ellipsoidal in polar views, 29×28(–29)–31×31–32 μ. Distal furrow 6–10 μ wide. Lateral furrow 10×3–5 μ. Exine tectate, 2 μ thick. Sexine granulate, with LO-pattern. Tectum psilate.

The voucher is Taipei, *Suzuki S. s. n.* Feb. 10, 1929.

Cyperus tuberosus Rottb. 塊莖莎草

Grains 1(-4)-aperturate, obovoidal in equatorial and ellipsoidal in polar views, 35-39×45(-50)-51×43(-49)-50 μ. Distal furrow 4-6 μ wide. Lateral furrow 10×2-5 μ. Exine tectate, 1.5-2 μ thick. Sexine granulate, with LO-pattern. Tectum psilate.

The voucher is Taipei, *Suzuki T. 21398.*

Cyperus unioloides R. Br.

Grains 4-aperturate, obovoidal in equatorial and ellipsoidal in polar views, 34×46(-49)-57×50(-57)-65 μ. Distal furrow 10-20 μ wide. Lateral furrow 12-20×2-5 μ. Exine tectate, 2 μ thick. Sexine granulate, with LO-pattern. Tectum psilate.

The voucher is Sun Moon Lake, *Kudo & Sasaki 15625.*

Eleocharis acicularis Br. 牛毛氈

Grains 1-aperturate, obovoidal in equatorial and ellipsoidal in polar views, 35×46×44(-46)-48 μ. Furrows as long as P axes, 46×6-8 μ. Exine tectate, 1 μ thick. Sexine granulate, with LO-pattern. Tectum psilate.

The Voucher is Nankan, *Chuang 4127.*

Eleocharis caribaea (Rottb.) S. F. Blake

Grains 1-aperturate, subspheroidal or ellipsoidal in equatorial and ellipsoidal in polar views, 32-33×42(-44)-45×36-37 μ. Furrows as long as P axes, 42-45×8-10 μ. Exine tectate, 1.5-2 μ thick. Sexine granulate, with LO-pattern. Tectum psilate.

The voucher is Hsinchu, *Simada 4257C.*

Eleocharis congesta D. Don var. **japonica** (Miq.) T. Koyama 針蘺 Plate I & Fig. 9

Grains 1-aperturate, obovoidal to ellipsoidal in equatorial and ellipsoidal in polar views, 35(-38)-39×43(-52)-57×42(-43)-44 μ. Furrows as long as P axes, 43-57×5-10 μ. Exine tectate, 1.5 μ thick. Sexine granulate, with LO-pattern. Tectum with scabrate processes or psilate.

The voucher is Taipei, *Simizu 2152.*

Eleocharis geniculata (L.) Roem.

Grains 1-aperturate, ellipsoidal in both equatorial and polar views, 30-31×41(-47)-49×35(-37)-39 μ. Furrows as long as P axes, 41-49×10-13 μ. Exine tectate, 1.2 μ thick. Sexine granulate, with LO-pattern. Tectum with scabrate processes or psilate.

The voucher is Oluanpi, *Kudo & Mori 16147.*

Fimbristylis aestivalis (Retz.) Vahl. 小硅幷飄拂草

Grains 1-aperturate, ellipsoidal in both equatorial and polar views, 24(-27)-29×29(-30)-33×25(-28)-33 μ. Furrows as long as P axes, 29-33×4-7 μ. Exine tectate, 1.5 μ thick. Sexine granulate, with LO-pattern. Tectum with scabrate processes.

The voucher is Tainan, *Morimoto 208.*

Fimbristylis autumnalis (L.) Roem. & Schult. 錐葉飄拂草

Grains 1-aperturate obovoidal in equatorial and subspheroidal to spheroidal in polar views, 26(-28)-31×28(-32)-35×31(-38)-41 μ. Furrows as long as P axes, 31-

35×5–7 μ. Exine intectate, 1.2 μ thick. Sexine granulate, with LO-pattern. Tectum with scabrate processes.

The voucher is Hsinchu, *Simada 309B*.

Fimbristylis complanata (Retz.) Link. 太平飄拂草

Grains 1-aperturate, obovoidal in equatorial and ellipsoidal in polar views, 34×38×41(–45)–47×42(–44)–48 μ. Furrows as long as P axes, 41–47×6–7 μ. Exine intectate, 1.5 μ thick. Sexine granulate, with LO-pattern. Tectum with scabrate processes.

The voucher is Hsinchu, Sanwan, *Simada 301B*.

Fimbristylis cymosa R. Br. 聚傘花飄拂草

Grains 1-aperturate, obovoidal to ellipsoidal in equatorial and ellipsoidal to obovoidal in polar views, 26(–30)–32×32(–35)–37×28(–35)–37 μ. Furrows as long as P axes, 32–37×4–6 μ. Exine tectate to intectate, 1.5 μ thick. Sexine granulate, with LO-pattern. Tectum with scabrate processes.

The vouchers are Taipei, *Suzuki S. 4734*; Taitung, *Koyama 13078*.

Fimbristylis dichotoma (L.) Vahl. 竹子飄拂草

Grains 1-aperturate, obovoidal to ellipsoidal in equatorial and ellipsoidal in polar views, 30–37×34–52×37–44 μ. Furrows as long as or as 3/4th the length as P axes, 35–40×8–10 μ. Exine intectate, 1–1.5 μ thick. Sexine granulate, with LO-pattern. Tectum with scabrate processes.

The vouchers are Keelung, *Chuang 3932*; Taipei, *Nonaka & Mori s. n.* June 25, 1933.

Fimbristylis diphylla Vahl.

Grains 1-aperturate, ellipsoidal in both equatorial and polar views, 35–40×42–47×32(–35)–42 μ. Furrows as 3/4th the length as P axes, 42–47×4–6 μ. Exine intectate. 1.2 μ thick. Sexine granulate, with LO-pattern. Tectum with scabrate processes.

The voucher is Hsinchu, Komokwam, *Simada 306B*.

Fimbristylis koidzumiana Ohwi 小泉氏飄拂草

Grains 1-aperturate, apple-shape in equatorial and ellipsoidal in polar views, 30–31×33(–36)–38×36–37 μ. Furrows as long as P axes, 33–38×4–7 μ. Exine intectate, 1.2 μ thick. Sexine granulate, with LO-pattern. Tectum with scabrate processes.

The voucher is Hengchung, *Matuda 404*.

Fimbristylis miliacea (L.) Vahl. 水虱草 Plate I & Fig. 10

Grains 1-aperturate, spheroidal to subspheroidal in equatorial and ellipsoidal in polar views, 33–35×35(–39)–42×35(–36)–39 μ. Furrows as 3/4th the length as or as long as P axes, 34–44×4–7 μ. Exine intectate, 1.2 μ thick. Sexine granulate, with LO-pattern. Tectum with scabrate processes.

The voucher is Botel Tobago, *Sasaki s. n.* 1926.

Fimbristylis monostachya (L.) Hassk.

Grains 1-aperturate, obovoidal to ellipsoidal in equatorial and ellipsoidal in polar views, 42×43–50×34–40 μ. Furrows as long as P axes, 43–50×8–12 μ. Exine tectate to intectate, 1.2 μ thick. Sexine granulate, with LO-pattern. Tectum with scabrate processes.

The voucher is Keelung, *Chuang 3940.*

Fimbristylis schoenoides Vahl.

Grains 1-aperturate, ellipsoidal or obovoidal in equatorial and ellipsoidal in polar views, 27–35×35(–40)–47×32–40 μ. Farrows as long as or as 3/4th the length as P axes, 37–47×10–15 μ. Exine intectate, 1.2–1.5 μ thick. Sexine granulate, with LO-pattern. Tectum with scabrate processes.

The vouchers are Taipei, *Simada 127*; Sun Moon Lake, *Kudo & Sasaki s. n.* Sept. 19, 1929.

Fimbristylis sieboldii Miq. 彭佳嶼飄拂草

Grains 1-aperturate, obovoidal to ellipsoidal in equatorial and ellipsoidal in polar views, 32–35×35(–39)–50×34(–36)–43 μ. Furrows as long as P axes, 32–50×8–12 μ. Exine intectate, 1 μ thick. Sexine granulate, with LO-pattern. Tectum with scabrate processes.

The vouchers are Taipei, *Tanaka & Shimada 17809*; Botel Tobago, *Sasaki s. n.* May 1924.

Fimbristylis sieboldii Miq. var. **anpinensis** (Hay.) T. Koyama.

Grains 1-aperturate, obovoidal in equatorial and ellipsoidal in polar views, 31×36(–39)–43×34(–37)–42 μ. Furrows as 3/4th the length as P axes, 35–40×8–10 μ. Exine tectate to intectate, 1.2 μ thick. Sexine granulate, with OL-pattern. Tectum with scabrate processes.

The voucher is Ilan Hsien, Kuei-shan, *Hsu s. n.* Sept. 25, 1960.

Fimbristylis spathacea Roth.

Grains 1-aperturate, obovoidal in equatorial and ellipsoidal in polar views, 30–37×35(–38)–39×38–42 μ. Furrows as long as P axes, 35–39×4–8 μ. Exine tectate, 1.5 μ thick. Sexine granulate, with LO-pattern. Tectum with scabrate processes.

The voucher is Hengchung, *Hibino & Suzuki s. n.* Jan. 21, 1933.

Fimbristylis squarrosa Vahl. Plate I & Fig. 11

Grains 1-aperturate, triangular to ellipsoidal in equatorial and ellispsoidal in polar views, 25(–26)–29×28(–32)–37×28 μ. Furrows as long as P axes, 28–37×4–6 μ. Exine intectate, 1.5 μ thick. Sexine granulate, with LO-pattern. Tectum with scabrate processes.

The voucher is Taipei, *Sasaki s. n.* Aug. 1928.

Fimbristylis subinclinata T. Koyama

Grains 1-aperturate, obovoidal in equatorial and ellipsoidal to spheroidal in polar

views, 32×35–36×34(–37)–38 μ. Furrows as long as P axes, 31–36×8–10 μ. Exine tectate, 1.2 μ thick. Sexine granulate, with LO-pattern. Tectum with scabrate processes.

The vocher is Taitung, *Koyama & Kao 13078*.

Fimbristylis subbispicata Nees. & Mey. 水蔥

Grains 1-aperturate, obovoidal to spheroidal in equatorial and ellipsoidal in polar views, 32–33×36(–42)–47×34(–36)–38 μ. Furrows as long as P axes, 36–47×8–12 μ. Exine tectate, 1.5 μ thick. Sexine granulate, with LO-pattern. Tectum with scabrate processes.

The voucher is Keelung, *Yamamoto 63*.

Fimbristylis tetragona R. Br. 四方飄拂草

Grains 1-aperturate, ellipsoidal in both equatorial and polar views, 35–36×40(–46)–58×40–43 μ. Furrows as long as P axes, 40–56×6–10 μ. Exine intectate, 1–1.5 μ thick. Sexine granulate, with LO-pattern. Tectum with scabrate processes.

The voucher is Taouyuan, *Sasaki s. n.* Oct. 31, 1925.

Fimbristylis velata R. Br.

Grains 1-aperturate, obovoidal to ellipsoidal in equatorial and ellipsoidal in polar views, 26(–27)–30×30(–35)–37×25(–27)–30 μ. Furrows as long as P axes, 30–37×6–8 μ. Exine intectate, 1.5 μ thick. Sexine granulate, with LO-pattern. Tectum with scabrate processes.

The voucher is Taipei, *Sasaki s. n.* Mar. 10, 1929.

Fuirena ciliaris (L.) Roxb.

Grains 1-aperturate, ellipsoidal in both equatorial and polar views, 40×48(–51)–52×40(–41)–43 μ. Furrows as long as P axes, 48–52×10–12 μ. Exine tectate, 1.2 μ thick. Sexine granulate, with LO-pattern. Tectum psilate.

The voucher is Chiari, *Matuda s. n.* July 1919.

Fuirena umbellata Rottb. Plate I & Fig. 12

Grains 1-aperturate, subspheroidal to spheroidal in both equatorial and polar views, 38–50×42–52×39–44 μ. Furrows as long as P axes, 42–52×5–8 μ. Exine tectate, 1–15 μ thick. Sexine granulate, with LO-pattern. Tectum psilate.

The voucher is Taoyuan, *Simada 735*.

Hypolytrum latifolium L. C. Rich. Plate II & Figs. 1–2

Grains 1-aperturate, ellipsoidal in both equatorial and polar views, rectangular in lateral view, 23(–24)–26×30×26×29 μ. Furrows as long as P axes, 30×10–12 μ. Exine tectate, 1.5–2 μ thick. Sexine finely reticulate, with OL-pattern. Tectum with scabrate processes.

The voucher is Taipei, Kankou, *Kao 3626*.

Kyllinga brevifolia Rottb. 水蜈蚣 Plate II & Fig. 3

Grains 4-aperturate, three lateral indistinct furrows and one distinct distal

furrow, obovoidal in equatorial and ellipsoidal in polar views, 26–35×24–37×30–37 μ. Distal furrow 8–14 μ wide. Lateral furrow 12×4–6 μ. Exine tectate, 1.5–2 μ thick. Sexine granulate, with LO-pattern. Tectum psilate.

The vouchers are Mt. Taiping, *Kao 4631*; Taipei, *Sasaki s.n.* July 3, 1929.

Kyllinga monocephala Rottb. 單頭水蜈蚣 Plate II & Fig. 4

Grains 4-aperturate, three lateral indistinct furrows and one distinct distal furrow, obovoidal in equatorial and subspheroidal in polar views, 27(–28)–29×26(–30)–35×27(–30)–33 μ. Distal furrow 7–12 μ wide. Lateral furrow 15×5 μ. Exine tectate, 2 μ thick. Sexine granulate, with LO-pattern.

The voucher is Taipei, *Sasaki s.n.* July 3, 1929.

Lipocarpha microcephala (R. Br.) Kunth. 湖瓜草

Grains 4-aperturate, three lateral indistinct poroids and one distinct distal furrow, subspheroidal to spheroidal in both equatorial and polar views, 22–23×31–32×24(–25)–29 μ. Distal furrow 10–12 μ wide. Lateral furrow 8–12×5–7 μ. Exine tectate, 1.5–2 μ thick. Sexine recticulate, with LO-pattern. Tectum psilate.

The voucher is Taiching, *Ihite T. s.n.* Aug. 11, 1939.

Lipocarpha senegalensis Dandy. Plate II & Fig. 5

Grains 4-aperturate, three lateral indistinct furrows and one distinct distal furrow, obovoidal in equatorial and spheroidal in polar views. 36(–34)–35×34(–47)–49×35(–38)–43 μ. Distal furrow 8–10 μ wide. Lateral furrow 9–11×4–6 μ. Exine tectate, 2–3 μ thick. Sexine granulate, with LO-pattern. Tectum with scabrate processes.

The voucher is Sun Moon Lake, *Kudo & Sasaki 15627*.

Rhynchospora chinensis Nees. & Mey. Plate II & Fig. 6

Grains 1-aperturate, obovoidal in equatorial and ellipsoidal in polar views, 34(–35)–42×40(–44)–48×45(–47)–50 μ. Furrows as 3/4th length as P axes, 40–48×8–12 μ. Exine tectate, 2 μ thick. Sexine granulate, with LO-pattern. Tectum psilate.

The voucher is s. loc. *s. coll. 025632*.

Rhynchospora corymbosa (L.) Britt. 叢房花刺草

Grains 1-aperturate, obovoidal in equatorial and ellipsoidal in polar views, 29(–31)–34×34(–37)–42 μ. Furrows as long as P axes, 34–42×10–12 μ. Exine tectate, 1.5 μ thick. Sexine granulate, with LO-pattern. Tectum with scabrate processes.

The voucher is Taipei, *Sasaki s.n.* Mar. 19, 1929.

Scirpus juncoides Rosb. var. **ohwianus** (T. Koyama) T. Koyama 蜜蘋 Plate II & Fig. 7

Grains 1-aperturate, obovoidal in equatorial and spheroidal in polar views, 47–50×43(–51)–56×47(–56)–60 μ. Furrows as long as P axes, 43–56×10–14 μ. Exine tectate, 1.5 μ thick. Sexine granulate, with LO-pattern. Tectum psilate.

The voucher is Pingtung, *Matuda 115*.

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Scirpus lacustris L. var. **creber** (Fer.) T. Koyama 螢蔺, 水葱

Grains 1-aperturate, triangular to obovoidal in equatorial and ellipsoidal in polar views, 39–42×43(–48)–52×47(–52)–57 μ. Furrows as long as P axes, 43–52×10–12 μ. Exine tectate, 2 μ thick. Sexine granulate, with LO-pattern. Tectum psilate.

The voucher is s. loc. *Faurie 8381.*

Scirpus morrisonensis Hay. 玉山針蔺

Grains 1-aperturate, obovoidal in equatorial and ellipsoidal in polar views, 32(–35)–39×37(–40)–47×43(–48)–51 μ. Furrows as long as P axes, 37–47×8–10 μ. Exine tectate, 1 μ thick. Sexine granulate, with LO-pattern. Tectum psilate.

The voucher is Chiayi Hsien, Mt. Morrison, *Kao & Chuang 4028.*

Scirpus triangulatus Roxb. 三角藨針蔺 Plate II & Fig. 8

Grains 1-aperturate, obovoidal in equatorial and ellipsoidal in polar views, 44(–50)–57×45(–52)–54×60(–65)–72 μ. Furrows as 3/4th the length as P axes, 45×10–13 μ. Exine tectate, 1.3 μ thick. Sexine granulate, with LO-pattern. Tectum psilate.

The voucher is Taitung, *Kawakami s. n.* June 8, 1906.

Scirpus wallichii Nees. 華力氏針蔺

Grains 1-aperturate, obovoidal in lateral view, obovoidal to subspheroidal in both equatorial and polar views, 38–46×42(–46)–50×45–49 μ. Furrows as long as P axes, 42–50×10–13 μ. Exine tectate, 1.2–1.5 μ thick. Sexine granulate, with LO-pattern. Tectum psilate.

The voucher is Kankou, *DeVol 8060.*

Scleria parvula Steud. Plate II & Fig. 9

Grains 1-aperturate, ellipsoidal in both equatorial and polar views, 39–41×43(–49)–50×36–45 μ. Furrows as long as P axes, 43–50×8–10 μ. Exine tectate, 1 μ thick. Sexine granulate, with LO-pattern. Tectum psilate.

The voucher is Taipei, *Koda s. n.* Sept. 13, 1920.

Scleria rugosa R. Br. 粗體黃珠芽

Grains 1-aperturate, ellipsoidal in both equatorial and polar views, 37–40×40(–42)–44×32–35 μ. Furrows as long as P axes, 42–44×8–10 μ. Exine tectate, 1.2–1.5 μ thick. Sexine granulate, with LO-pattern. Tectum psilate.

The voucher is Taipei, *Tanaka & Shimada 17830.*

Plate II. Cyperaceae, ×1000.

1-2. *Hypolytrum latifolium* L. C. Rich (*Kao 3626*)
3. *Kyllinga brevifolia* Rottb. (*Kao 4631*)
4. *Kyllinga monocephala* Rottb. (*Sasaki s. n.* July 3, 1929)
5. *Lipocarpha senegalensis* Dandy (*Kudo & Sasaki 15627*)
6. *Rhynchospora chinensis* Ness. & Mey. (*s. coll. 025632*)
7. *Scirpus juncoides* Rosb. var. *chuianus* (T. Koyama) T. Koyama (*Matuda 115*)
8. *Scirpus triangulatus* Roxb. (*Kawakami s. n.* June 8, 1906)
9. *Scleria parvula* Steud. (*Koda s. n.* Sept. 13, 1920)

Scleria terrestris Fassett 陸生實珠茅

Grains 1-aperturate, obovoidal in equatorial and ellipsoidal in polar view, 32(-36)-38(-45)-48×40(-45)-47 μ. Furrows as long as P axes, 38-46 ×10-12 μ. Exine tectate, 1.2 μ thick. Sexine granulate, with LO-pattern.

The voucher is Keelung, *Suzuki T. 4249.*

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